

WHAT IS CLAIMED IS:

1           1.     In a process for producing wood fiberboard by pressing  
2 binder-treated wood wherein the wood fibers are hydrothermally treated and milled  
3 at elevated temperature under steam pressure in a refiner unit, subsequently  
4 transferred to a blow-line, then dried and pressed under pressure, optionally at  
5 elevated temperature, to produce boards, the improvement comprising:

6                 selecting as said binder a multi-component binder, and treating the  
7 wood fibers in the refiner with a first component of said multi-component binder,  
8 at a temperature of 120°C to 200°C, said treating taking place prior to the milling  
9 step, during the milling step, or shortly after the milling step in the front section of  
10 the blow-line, said first component being substantially non-reactive during said  
11 treating of said wood fibers, and adding at least a second component of said multi-  
12 component binder at a lower temperature of not more than 150°C at the end of the  
13 blow-line or during or after the drying of the wood fibers.

1           2.     In the process of claim 1 for producing wood fiberboard by  
2 pressing wood fibers which have been treated with binder, in which the wood fibers  
3 are hydrothermally treated and milled at elevated temperature under steam pressure  
4 in a refiner unit, subsequently transferred to a blow-line, then dried and pressed  
5 under pressure, optionally at elevated temperature, to produce boards, the  
6 improvement comprising:

7                 treating the wood fibers with a two-component binder, a first  
8 component A) containing functional groups which are nonreactive at elevated  
9 temperature and a second component B) containing functional groups which are  
10 reactive at elevated temperature, the component A) added in the refiner unit at a  
11 temperature of from 120°C to 200°C prior to the milling step during the milling  
12 step, or shortly after the milling step in the front section of the blow-line, and  
13 component B) added at a lower temperature of not more than 150°C at the end of  
14 the blow-line or during or after the drying of the wood fibers.

1           3.     The process of claim 2, wherein component A) is a copolymer  
2 comprising one or more base comonomer units selected from the group consisting

3 of vinyl esters of unbranched or branched alkylcarboxylic acids having from 1 to  
4 18 carbon atoms, acrylic esters of branched or unbranched alcohols having from 1  
5 to 15 carbon atoms, methacrylic esters of branched or unbranched alcohols having  
6 from 1 to 15 carbon atoms, dienes, olefins, vinylaromatics and vinyl halides, and  
7 from 0.1 to 50% by weight, based on the total weight of the copolymer, of one or  
8 more functional comonomer units containing carboxyl, hydroxy, or NH groups.

1 4. The process of claim 3, wherein copolymer A) comprises  
2 comonomer units obtained by copolymerization of the base comonomer units with  
3 ethylenically unsaturated monocarboxylic or dicarboxylic acids and/or with maleic  
4 anhydride as carboxyl-functional comonomer units, by copolymerization with  
5 hydroxyalkyl acrylates and/or hydroxyalkyl methacrylates having a C<sub>1</sub>-C<sub>8</sub>-alkyl  
6 radical as hydroxy-functional comonomer units, or by copolymerization with one  
7 or more comonomers selected from the group consisting of (meth)acrylamide,  
8 diacetoneacrylamide, maleimide, amides of monoalkyl maleates, amides of  
9 monoalkyl fumarates, diamides of maleic acid, diamides of fumaric acid, amides of  
10 monovinyl glutarate, amides of monovinyl succinate, amides of monoallyl glutarate,  
11 and amides of monoalkyl succinate as NH functional comonomers, or wherein NH  
12 functionality is added as amino-functional oligomers containing primary or  
13 secondary NH groups to the copolymer A).

1 5. The process of claim 2, wherein component B) comprises at  
2 least one crosslinker selected from the group consisting of bisphenol A epoxy  
3 resins, diisocyanate(s), oligoisocyanate(s), polyisocyanate(s), compounds containing  
4 two or more groups selected from the group consisting of aldehyde, keto and  
5 reactive CH groups, compounds containing a plurality of a aziridine, carbodiimide  
6 or oxazoline groups, and mixtures thereof.

1 6. The process of claim 2, wherein copolymers containing  
2 moieties derived from epoxy, N-methylol, ethylene carbonate or isocyanate group-  
3 containing functional monomers or combinations of these functional monomers  
4 together with moieties derived from non-functional comonomers are used as  
5 crosslinker B), and wherein the non-functional comonomers used to prepare

6 component B) comprise substantially the same comonomers used as base monomers  
7 for copolymer A.

1 7. The process of claim 2, wherein diamines, oligoamines,  
2 polyamines or polyalkyleneamines, compounds containing two or more OH groups,  
3 or polyvalent metal ions are used as component B) in combination with carboxyl-  
4 functional copolymer(s) A.

1 8. The process of claim 2, wherein compounds containing two  
2 or more silanol or alkoxy silane groups in monomeric or condensed form, or  
3 polyvalent metal ions, are used as crosslinker B) in combination with hydroxy-  
4 functional copolymers A).

1 9. The process of claim 2, wherein at least one of dicarboxylic,  
2 oligocarboxylic or polycarboxylic acids are used as crosslinker B) in combination  
3 with NH-functional copolymers A).

1 10. The process of claim 2, wherein component B) is added  
2 together with a crosslinking catalyst.

1 11. The process of claim 2, wherein carboxyl-functional  
2 copolymers are used as component A) and component B) comprises a catalyst which  
3 catalyzes reaction of the carboxyl groups of component A) with OH groups of the  
4 cellulose of the wood fibers.

1 12. The process of claim 2, wherein diamines, oligoamines and/or  
2 polyamines comprise component A) and diisocyanates comprise component B).

1 13. The process of claim 1, wherein tin catalysts are used as  
2 component A), in combination with diisocyanates, oligoisocyanates or  
3 polyisocyanates or dicarboxylic, oligocarboxylic or polycarboxylic acids as  
4 component B).

1                   14.    The process of claim 1, wherein dialkylpolysiloxanes having  
2 identical or different alkyl radicals having from 1 to 4 carbon atoms and containing  
3 hydroxyl or vinyl functional groups are used as component A), and silicic esters are  
4 used as component B) in the case of hydroxyl end group-containing component A),  
5 or platinum catalysts or peroxides are used as component B) in the case of the vinyl  
6 end group-containing component A).

1                   15.    The process of claim 1, wherein an amino-functional  
2 polysiloxane is used as component A) and an epoxy-functional polysiloxane is used  
3 as component B), or dimethylpolysiloxanes are used as component A) and  
4 condensation catalysts are used as component B).

1                   16.    The process of claim 1, wherein component A) is added in the  
2 refiner unit before the mill, in the mill, or shortly after the mill in the first third of  
3 the blow-line, and component B) is added in the last third of the blow-line of the  
4 refiner unit, during drying of the fibers in the drying tube, or after drying of the  
5 fibers.

1                   17.    The process of claim 1, wherein said component B) comprises  
2 a catalytically crosslinkable composition, and component A) comprises a catalyst  
3 in an amount effective to crosslink component B) during pressing at elevated  
4 temperature.

1                   18.    The process of claim 1, wherein said component A) comprises  
2 a catalytically crosslinkable composition, and component B) comprises a catalyst in  
3 an amount effective to crosslink component A) during pressing at elevated  
4 temperature.

1                   19.    The process of claim 2 wherein one of component A) or  
2 component B) or both component A) and component B) contains a catalyst which  
3 catalyzes the crosslinking of the functional groups of component A) with the  
4 functional groups of component B).